CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-63

July 13, 1977

1. Name of fault: Soledad fault.

2. Location of fault: Mint Canyon, Agua Dulce, and Acton 7.5 minute quadrangles, Los Angeles County (see figure 1).

3. Reason for evaluation: Part of a 10-year program.

4. List of references:

a) Agnew, H.W., 1948, The geology of a part of the Ravenna quadrangle, California: Unpublished M.S. thesis, California Institute of Technology, 18 p., map scale 1:12,000.

b) Crowell, J.C., 1968, Movement of faults in the Transverse Ranges and speculations on the tectonic history of California in Proceedings of conference on geologic problems of San Andreas Fault System, Dickinson, W.R., and Grantz, A., editors: Stanford University Publications, Geological Sciences, v. 11, p. 323-341.

c) Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map no. 1, scale 1:750,000.

d) Oakeshott, G.B., 1936, A detailed geologic section across the western San Gabriel Mountains of California: Unpublished PhD. thesis, University of Southern California, 151 p., map scale 1:24,000.

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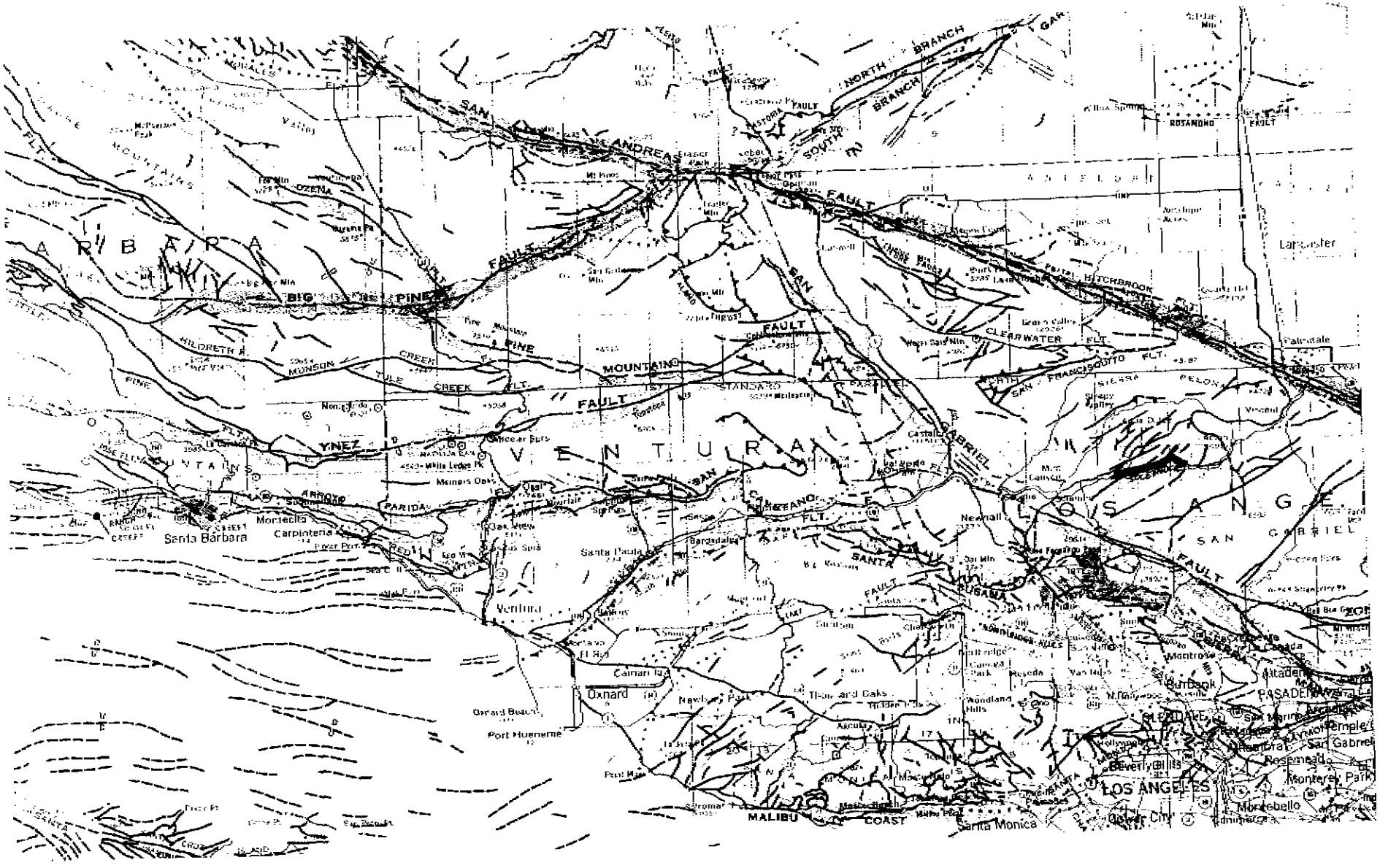
FIGURE 1. General location of the Soledad Fault (Jennings, 1975, scale 1:750,000).



e) Sharp, R.P., 1935, Geology of the Ravenna quadrangle, Los Angeles County, California: Unpublished M.S. thesis, California Institute of Technology, 82 p., map scale 1:24,000.

5. Summary of available data:

The Soledad fault is apparently a normal fault, dipping between 37° and 70° northward (Oakshott, 1936, ~~;~~ ~~and;~~ Sharp, 1935, p. 62). Sharp, who presents the most detailed data on the fault, determined that the maximum amount of displacement is indeterminable, but that at least 1,300 feet of chiefly vertical displacement has occurred. He did not find any good evidence ~~for~~ that strike-slip movement ~~having~~ had occurred (p. 62).

In a few places along the Soledad fault, a zone of brecciation a few tens of feet wide exists; but in other places there has been very little brecciation (Sharp, p. 62). The fault is marked almost everywhere by an obsequent fault-line scarp, and is clearly displaced by a number of faults (Sharp, p. 66).

Sharp states (p. 66), "No movement has occurred on the Soledad fault in late Quaternary time as shown by the unbroken terrace deposits which lie across it." He also (p. 65) shows this clearly in a photograph. Agnew (1948,) also depicts the Soledad fault as buried under terrace deposits in several locations. Both authors depict the fault as cutting no unit younger than Vasquez Formation (Oligocene).

The only "evidence" contrary to the above comes from Crowell (1968, p. 327). In his figure 3 (reproduced as F 5 figure 2 here) he graphically states that the Soledad fault has been active during the Pleistocene. He does not refer to the fault, specifically, in his text, and appears to have made a generalization based on concepts of regional tectonics ~~concepts~~ and the general strike of the fault (p. 328).

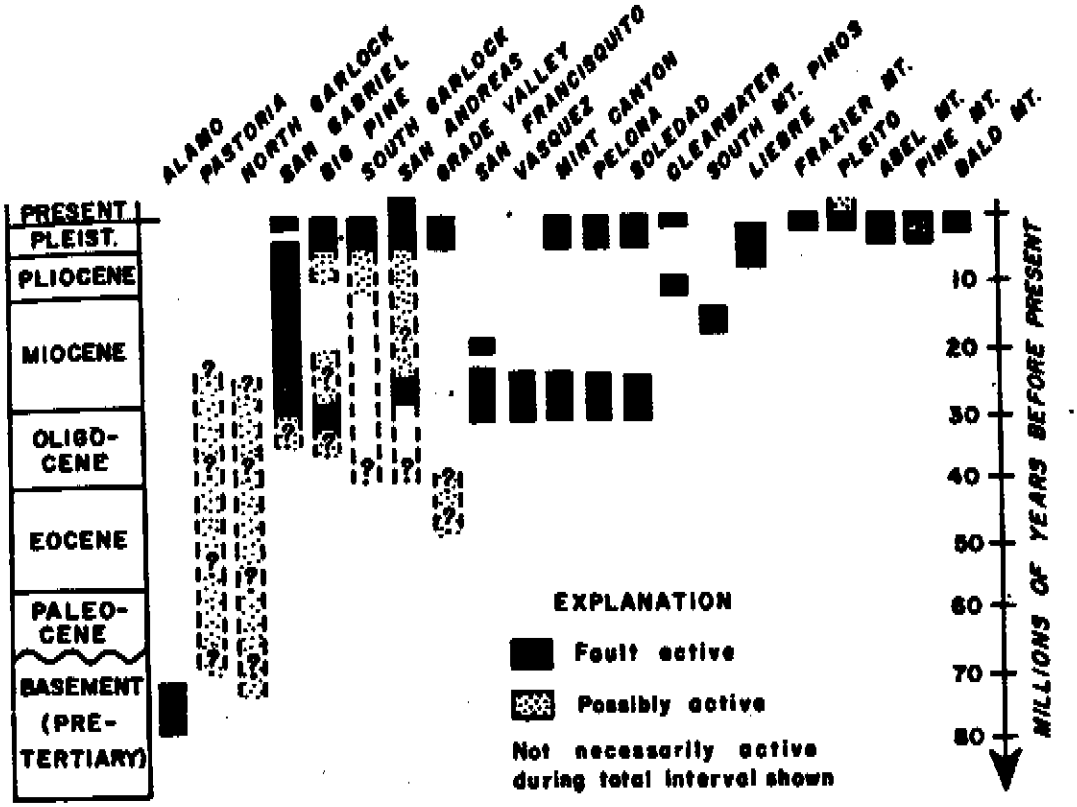


Figure 2.--Time of faulting for some major faults of the Tejon Pass and Soledad Basin regions, southern California (reproduced from Crowell, 1968, Figure 3).

6. Interpretation of air photos: Not attempted.

7. Field observations: Not attempted.

8. Conclusions:

It would appear that the Soledad fault has not been active during at least ~~the~~ part of the late Pleistocene, or any of the Holocene, as evidenced by the lack of displacement of the terrace deposits which unconformably overlie the fault. Indeed, the presence of an obsequent fault-line scarp would indicate that erosion has far outstripped tectonic displacement. From this evidence one may seriously question the assigning of a Quaternary age to the fault.

Thus, it appears that the fault is not sufficiently active to warrant further consideration for zoning purposes.

9. Recommendations:

Under the present criteria, the Soledad fault should not be zoned. No further work appears necessary.

10. Geologist's name; date:

Theodore C. Smith

THEODORE C. SMITH
Assistant Geologist
July 13, 1977

I agree with the recommendations
E Mtt
7/18/77